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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/800,020      | 03/15/2004  | Tatsuhiko Nonoyama   | 461-168             | 6803             |

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| EXAMINER |
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KOSLOW, CAROL M

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| ART UNIT | PAPER NUMBER |
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1755

DATE MAILED: 08/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/800,020

Applicant(s)

NONOYAMA ET AL.

Examiner

C. Melissa Koslow

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 July 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/24/06.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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This action is in response to applicants' amendment of 24 July 2006. The amendments to the specification have overcome the objections to the disclosure and the specification. The amendments to the claims have overcome the 35 USC 112 rejections and the rejections based on 35 USC 102(a), 35 USC 102(b) and 35 USC 102(e). Applicant's arguments with respect to the remaining art rejections have been fully considered but they are not persuasive.

The information disclosure statement filed 24 July 2006 fails to comply with 37 CFR 1.97(c) because it lacks the fee set forth in 37 CFR 1.17(p) and because it lacks a statement as specified in 37 CFR 1.97(e). It has been placed in the application file, but the information referred to therein has not been considered.

Claim 1 is objected to because of the following informalities: The definition for x contains a typographical error. The correct range should be " $0 \leq x \leq 0.2$ ", not " $0 \leq x \geq 0.2$ ", as claimed. " $0 \leq x \leq 0.2$ " was originally claims and disclosed. Appropriate correction is required.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent application publication 2003/0008762.

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being obvious over U.S. patent 6,692,652.

Applicant has provided no evidence in this file showing that the invention was owned by, or subject to an obligation of assignment to, the same entity as U.S. patent 6,692,652 at the time this invention was made, or was subject to a joint research agreement at the time this invention

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was made. Thus this reference qualifies as prior art under subsections of 35 U.S.C. 102(e) and (a), and therefore, is not disqualified as prior art under 35 U.S.C. 103(c).

Applicant may overcome the applied art either by a showing under 37 CFR 1.132 that the invention disclosed therein was derived from the invention of this application, and is therefore, not the invention "by another," or by antedating the applied art under 37 CFR 1.131.

U.S. patent application publication 2003/0008762 was issued as U.S. patent 6,692,652.

These references teach crystal or grain oriented ceramics composed of a polycrystalline body of an alkali pentavalent perovskite having the formula  $(\text{Na}_{1-x}\text{K}_x)(\text{Nb}_{1-y-z}\text{Ta}_y\text{Sb}_z)\text{O}_3$ , where  $x$  is 0-1,  $y$  is 0-1 and  $z$  is 0-1, in which the {100} crystal plane of the grain has a degree of orientation, according to the Lotgering method, of 30% or more. This formula is based on the teachings in column 4, lines 5-7 and column 5, lines 32-40 and claim 1. This formula encompasses and thus suggests the claimed formula. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). Given the overlap, one of ordinary skill in the art would expect the taught ceramics having the overlapping composition to inherently have the crystal system of claim 13, absent any showing to the contrary. The examples show that that grain oriented alkali pentavalent perovskite ceramics have a  $d_{31}$  and a  $g_{31}$  at least 1.1 times of these constants in non-orientated alkali pentavalent perovskite ceramics. Given this teaching, one of ordinary skill in the art would expect the suggested ceramics to inherently have improvements rates and differences that fall within the claimed ranges.

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The reference teaches producing this ceramic by mixing an anisotropic shaped powder, such as platelike crystals, which has a crystal growth plane that has lattice coherency with a specific crystal plane with a reaction material that can react therewith to form the taught ceramic, molding the mixture so the anisotropic shaped powder is oriented and heat treating the molded material to cause the mixture to react and form the ceramic. Column 4, lines 37-44 and column 7, lines 6-20 teaches the anisotropic shaped powder and the reaction material have the formula  $(\text{Na}_{1-x}\text{K}_x)(\text{Nb}_{1-y-z}\text{Ta}_y\text{Sb}_z)\text{O}_3$ , where x is 0-1, y is 0-1 and z is 0-1, which is the formula of claim 15.

As stated above, these references suggest the claimed ceramic. Paragraph [0155] and column 23, lines 11-19 teaches the taught grain orientated alkali pentavalent perovskite oxide ceramic, which would have a formula that encompasses the formula of claim 1 are suitable as piezoelectric or dielectric materials. One of ordinary skill in the art would have found it obvious to use these taught materials in piezoelectric or dielectric elements and use the modified ceramics as the thermoelectric material in conventional thermoelectric conversion element and as the ion-conducting material in conventional ion conducting elements. The references suggest the claimed ceramic, process and elements.

The fact the reference formula does not teach lithium does not overcome the rejection since the claimed compound does not have to include lithium, i.e., x can be 0. Applicants' genus arguments are not applicable in this situation because both the claims and the reference are directed to alkali metal pentavalent metal perovskite oxides, the same genus, where the only difference between the claimed formula and that suggested by the reference is the amounts of each component. One is not choosing from all the elements in the periodic table to form a

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specific compound, but is selected compositions from a formula which can fall within or outside the claimed formula. Applicants argue their claimed ceramic has unexpected and non-obvious superior characteristics, but they have not provided any evidence to support this argument, nor have they compared the claimed ceramic with that suggested. Applicants argue the cited case law is not applicable, but do not explain why nor does he provide the argued cases where the overlap is not suggested or make obvious the overlapping compositions. Applicants are referred to MPEP 2144.05, which further explains the Examiner's position and provides more recent case law. Applicant's final comment with respect to restrictions is not understood. The fact species restrictions are made has no relationship as to whether the reference teaches or makes obvious the claimed ceramic. The rejection is maintained.

Thus Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk  
August 9, 2006

  
C. Melissa Koslow  
Primary Examiner  
Tech. Center 1700